LANDSAT FOLLOW-ON INVESTIGATION #20820

(CONTRACT NO. NAS5-20918)

APPLICATION AND EVALUATION OF SATELLITE REMOTE SENSING DATA AND AUTOMATIC PROCESSING TECHNIQUES FOR STATE-WIDE LAND USE AND OTHER RESOURCE MANAGEMENT

PROGRESS REPORT FOR QUARTER ENDING

JULY 21, 1975

20820

PRINCIPAL INVESTIGATOR:

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INTRODUCTION

This report summarizes activities under the State of Mississippi's LANDSAT Follow-on Investigation, for the period ending July 21, 1975. This effort involves joint activities with the NASA/JSC Earth Resources Laboratory at Bay St. Louis, Mississippi, and with a number of key state agencies. The Office of Science and Technology (Office of the Governor) provides overall project management, and coordinates the multi-agency participation.

This reporting period constitutes the first quarter of operations under the contract. During this period, the primary emphasis has been on the initiation of specific efforts to achieve the major objectives of the investigation, which are: (1) Conversion of NASA-developed pattern-recognition software for use on state-owned computers; and (2) production of specific resource inventories. The contents of this report are organized in accordance with Article III of the contract, although there are no significant results as yet for inclusion under certain reporting categories.

A. PROBLEMS.

During this quarter a problem was encountered with regard to the spacecraft data accounts and Standing Request/Order specifications at the U. S. Geological Survey's EROS Data Center in Sioux Falls, South Dakota. Initial statements and correspondence received in June from Sioux Falls indicated that the original account allocation was $1,600 for computer compatible tapes (CCT's) and $5,800 for imagery. The Statement of Work for this investigation calls for the transfer of pattern recognition software from NASA/ERL to state-owned computers, and the production of specific resource inventories using computer-assisted classification techniques. Consequently, the emphasis is on the use of digital data for classification purposes, with imagery being used primarily for screening and gross-level analysis. Based on a projection of data requirements over the course of the investigation, the appropriate allocation was determined to be $5,800 for CCT's and $1,600 for imagery.

The original specifications for our Standing Request/Order also required a change so as to make the system useful in screening LANDSAT coverage for subsequent orders of CCT's and imagery. Necessary revisions to the specifications were: (1) Change date limitation so as to require continuous search of LANDSAT II coverage during the course of the investigation; (2) reduce automatic order to a single 7.3" black and white paper print of MSS band-7 only. Incorporating these revisions, the projected cost of imagery would be consistent with the $1,600 allocation.

Action was initiated in July to request the necessary changes through Mr. Edmund F. Szajna of NASA/Goddard Space Flight Center, Technical Monitor. The changes are expected to be in effect during August.

This problem did not significantly impede the project during the first quarter, due to the fact that the investigation is in its early phases.

Resolution of the problem should be expedited to avoid impeding the investigation in the coming months.

B. ACCOMPLISHMENTS.

Progress was made in several areas of the investigation during the first three months of operation. Specific accomplishments may be summarized under four basic headings which represent major task areas of the investigation:

1. State-wide Ground Truthing Effort. The first state-wide ground-truthing effort was concluded June 30, 1975, and was 100% complete. This effort included the participation of approximately 150 state employees located in all areas of the State. Ground truth information was collected by County Agents of the Cooperative Extension Service, County Foresters of the State Forestry Commission, Game Biologists of the Game and Fish Commission, as well as other state agency personnel. This information was forwarded to the Office of Science and Technology for joint use and analysis by the State and NASA/ERL. It should be noted that this activity by state personnel had been initiated prior to the formal execution of the contract. This was necessary due to the nature of the investigation and was feasible since this project builds upon previous joint activities between NASA/ERL and the State. Because of the seasonal nature of certain elements of the ground truth information, it was necessary to proceed with this effort in the interim between the initial notification of our selection for the LANDSAT Follow-on Investigation program in July, 1974, and the final execution of the contract which occurred in April, 1975.

The second state-wide ground truthing effort, utilizing the same state personnel, began July 1, 1975, and is approximately 15% completed as of this report.

2. Meetings with State Agency Participants. In May, a joint meeting was held between representatives of the Earth Resources Laboratory, the Office of Science and Technology, and the Mississippi Cooperative Extension Service at Mississippi State University, in Starkville. The purpose of this meeting was to discuss the state-wide ground truthing effort and progress to date, and to firm up details of specific resource inventories which are of interest to the agricultural community. Similar meetings were held in June with representatives of the State Forestry Commission and the State Game and Fish Commission. In each case, the meetings resulted in a priority listing of resource inventory needs as related to the specific interests of each agency. In addition, working relationships were established for agency participation in the production, evaluation, and application of the specific resource inventories.

For the second quarter, such meetings are planned with the remaining agency participants, including the Mississippi Marine Resources Council, the Board of Water Commissioners, the Central Mississippi Planning and Development District, and the Research and Development Center.

3. Software Conversion Effort. In March, the Assistant Director of the State Central Data Processing Authority visited NASA/ERL and was given a thorough briefing on the overall investigation and,specifically, on the pattern recognition software system. Subsequently, documentation was provided to the State by NASA/ERL on the specific software modules included in the system. This documentation was used by CDPA for a preliminary evaluation of the overall software conversion effort.

The software system consists of 6 basic modules which have been developed and refined by NASA/ERL for use on their Varian 73 computer.

Each of these modules must be reprogrammed for use on the State's IBM 370/155 system. The reprogramming got under way in June. The initial effort involved the identification of differences between the two computer systems which would impact the reprogramming effort. Basic differences were identified in the operating systems and the Fortran compilers, which cause incompatibilities in input/out functions and bit-manipulation routines. Actions were initiated in July to locate and/or develop suitable software to solve these problems.

During the coming quarter, resolution of the input/output and bit manipulation problems is expected, with assistance from NASA/ERL. The conversion of the first two modules of the pattern recognition software system should be accomplished by the end of the quarter.

4. Acquisition of Aircraft Data. During this quarter, aircraft data for Subsite 1, Hinds and Rankin Counties, Mississippi, was acquired. The digital data was received and data processing is in progress. The corresponding color infrared imagery was also ordered, received, and indexed.

C. SIGNIFICANT RESULTS.

None to report as yet.

D. PUBLICATIONS.

None to report as yet.

E. RECOMMENDATIONS.

None to report as yet.

F. FUNDS EXPENDED.

During this quarter, costs have been accumulated under the contract, but no vouchers have been submitted as yet. Expenditures for the quarter will be included in the next progress report.

G. DATA USE.

For the period ending July 21, 1975, the tabulation is as follows:

	Value of Data Allowed	Value of Data Ordered	Value of Data Received
Aircraft	$11,376	$1,656	$1,656
Spacecraft	7,400	-0-	-0-

H. AIRCRAFT DATA.

As noted in B. above, one set of aircraft data has been received, and processing is in progress. The usefulness of the data cannot be assessed until processing is completed and the results are evaluated.

September 1, 1975

CHARGE NUMBERS FOR COST CENTER C40, A&I

PRODUCT	WORK ORDER	FUNCTION	DESCRIPTION
N70K	B040	B00	Document indexing only, including translating titles and verbalizing
X70K	B050	B00	Document indexing only, including translating titles and verbalizing
STAR	B010	B00	Abstract writing and editing, indexing, and TXT. Use for translating and verbalizing.
E10K	B090	B00	Abstract writing and editing, indexing, and TXT. ERTS
X10K	B020	B00	Indexing and TXT.
CPA	BAC0	B00	Abstract editing, indexing, and TXT.
CDF	B100	B00	Special Document Indexing.
Thes. Term control	D020	D00	Checking new term forms before submitting them to Lexicographer.
V10K	C040	C00	Library Book indexing, coding, and categorizing. (Using NASA Thesaurus)
V10K	C050	C00	Library Book indexing, using MESH terms.
LSTAR Qtrly	E040	E00	Abstracting cumulative issue.
LSTAR Ann.Cum.	E050	E00	Abstracting cumulative issue.
Special Bibs.	F080	F00	Editing OGO (NSSDC)
Special Bibs	F140	F00	Editing AGARD. Lecture Series Bib.
ERTS Qtrly. (Augment Index)	F040	F00	Augmented indexing.
RTOP	B080	B00	Indexing, editing and verbalizing abstract.
RTOP Sum(Ann)	F110	F00	Dupe checking, coding, and cataloging.
Cong. Index (House)	H010	H00	Indexing.
Cong. Index (Senate)	H020	H00	Indexing.
Index NMI	H060	H00	Indexing.
NASA Chron. Index(Month)	H070	H00	Indexing.
NASA Chron. Index(Annual)	H080	H00	Indexing.

Index NNR & Speech(Annual)	H050	H00	Indexing.
AeroEng(AnnCum)	F060	F00	Augmented indexing.
Aero ed&Biol (Ann.Cum)	F020	F00	Augmented indexing.

Quality Assurance

STAR	E010	E00	Checking FF901s, reading printouts,etc.
E10K	E010	E00	Quality assurance of forms sent to NTIS

Manager

	701	Supervision
	702	Administration
	~~708~~ 707	Report preparation and answering TDs

MISC.

	703	Entering new terms in Thesaurus
	706	Training
	708	Meetings